

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
20 October 2005 (20.10.2005)

PCT

(10) International Publication Number  
**WO 2005/097491 A1**

(51) International Patent Classification<sup>7</sup>: **B32B 27/04**,  
C10J 03/00, C10G 03/00

(21) International Application Number:  
PCT/US2005/010283

(22) International Filing Date: 28 March 2005 (28.03.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/556,969 26 March 2004 (26.03.2004) US

(71) Applicant (for all designated States except US): **HYDRO-  
GEN POWER INC.** [US/US]; Metropolitan Tower, 1942  
Westlake Avenue, #1010, Seattle, WA 98101 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **TROCZYNSKI,  
Tomasz** [CA/CA]; 1050 East 57th Avenue, Vancouver, BC  
V5X 1T6 (CA).

(74) Agent: **HATHAWAY, Todd, N.**; 119 N. Commercial  
#620, Bellingham, WA 98225 (US).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ,  
TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA,  
ZM, ZW.

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,  
SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,  
GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

- with international search report
- before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
amendments

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: POWER SYSTEMS UTILIZING HYDROLYTICALLY GENERATED HYDROGEN

(57) Abstract: An apparatus and method for generating hydrogen by hydrolytic reaction and supplying the hydrogen to a user device, such as a fuel cell. Water is selectively supplied to a reactor vessel containing supply of an aluminum composite reactive material to produce the hydrolytic reaction. Hydrogen from the reaction vessel is supplied to at least one metal hydride buffer vessel at a relatively high pressure, and is released from the buffer vessel to the user device at a relatively low pressure. In the case of fuel cells, the relatively low pressure is less than the maximum allowable supply pressure of the cell, obviating potential damage thereto. The hydrogen flow may be switched alternately between a plurality of buffer vessels, so that one vessel is being charged at the relatively higher pressure while the other is releasing hydrogen to the fuel cell at the relatively low pressure. Water may be supplied to the reactor vessel to produce the reaction in response to a demand for hydrogen from the fuel cell or other user device. The demand for hydrogen may be detected by sensing a pressure drop in the hydrogen flow to the user device. There may also be a plurality of reactor vessels, with the water supply being controllable on a separate basis so that hydrogen can be generated from the vessels in a sequential, staged or phased manner.



**WO 2005/097491 A1**